Operating Instructions

LED Spot 100

#65807b

Masthead

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Warning notes and symbols in the operating instructions

These Operating Instructions describe the LED Spot 100, its operation and its uses. The safety and warning notices explain the safe, proper handling of the LED Spot 100.

You will find the symbols listed below next to all safety and warning instructions in these operating instructions where there is danger to life and limb. An additional signal word indicates the severity of a possible danger.

Observe these notes closely and be especially careful in these cases in order to preclude accidents.

DANGER! marks an immediately threatening danger. If it is not avoided, death or very severe injuries will result. Damage to property is possible.

WARNING! marks a possible danger. If it is not avoided, death or very severe injuries will result. Damage to property is possible.

CAUTION! marks a possible danger. If it is not avoided, slight injury may result. Damage to property is possible.

The symbols used in these operating instructions have the following meaning:

	This symbol warns of a hazard area
	This symbol warns of a hot surface
	This symbol warns of hazardous electrical voltage
	This symbol warns of UV radiation

The two following symbols are used to address practices for optimal operation and/or prevention of damage to the equipment. These information are not related to hazardous situations. Additionally, the signal words ATTENTION! and NOTE! are used.

ATTENTION!
This symbol with signal word is found at those places in the operating instructions which must be observed so that damage or destruction of the equipment is prevented.

NOTE!
This symbol is found next to notes, tips on operation and useful information.

1 Description

The LED Spot 100 has been developed for all applications requiring a highly intensive UV radiation over a large area.

The LED assembly, as well as an electronic power control, guarantee high intensity and homogenous distribution of light. The recognition of LED malfunction and a comprehensive monitoring function provide for very high process stability. So, especially in fully automated product lines, repeatable results can be realized even in shortest cycle times.

A LED has a typical service of more than 20 000 hours. The LEDs can be switched on and off as often as necessary. They do not require a heating or cooling phase.

The emitted wavelengths are available in 365/375/385/395/405 nm +/- 10 nm. It is thus possible to adapt the LED Spot 100 to any application in question.

The square light emitting aperture has a size of 100 mm x 100 mm. Depending on the selected intensity / homogeneity it can be increased considerably by changing the distance to the substrate. For even bigger irradiation fields, several LED Spots 100 can be connected without gaps. An integrated fan provides adequate cooling even for continuous operation.

The integrated fan provides adequate cooling even for continuous operation.

Features

Features

- Homogeneous irradiation of larger areas
- Extremely long LED service life
- Available in different wavelengths
- Integrated LED operating hours‘ counter.
- No heating phase
- No standby-time

Uses

Uses

The LED Spot 100 is appropriate for various applications, such as:

- Bonding, fixing or encapsulating of components in the electronic, optical or medical sector
- Fluorescence stimulation for material testing and picture processing
- High-intensity UV irradiation in the chemical, biological and pharmaceutical sector

Connections and Operating Elements

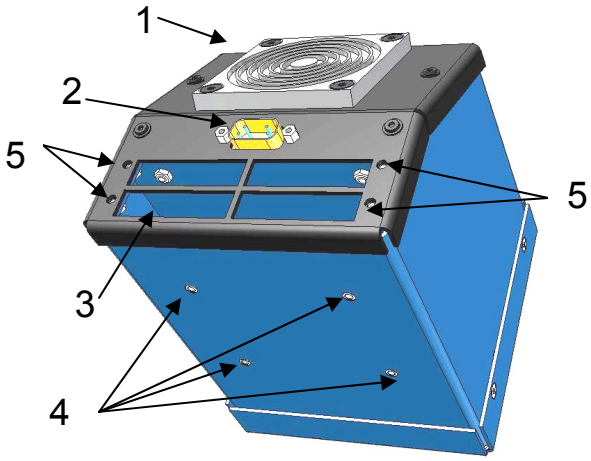


Fig. 1: LED Spot 100 – Front view

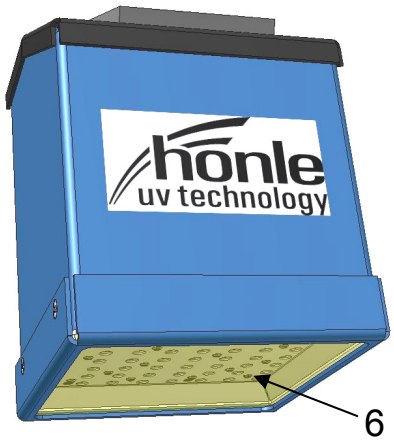


Fig. 2: LED Spot 100 – Rear view

1	Integrated fan (incl. filter mat)	4	Mounting threads (4 x M3)
2	9-pin D-SUB socket	5	Mounting threads (4 x M3)
3	Air outlet	6	Light emitting aperture

For further information on the dimensions of the LED Spot 100 refer to chapter 7 Technical Data, p. 21.

2 Safety

General Notes

General Notes

The first prerequisite for safe handling and trouble-free operation of the LED Spot 100 is knowledge of the basic safety regulations.
These Operating Instructions contain the most important notes on safe operation of the machine.
The Operating Instructions, and in particular the Safety Notices, must be followed by all persons who work with the machine.

In addition, the accident-prevention rules and regulations that apply at the place of installation must be observed. Special attention must be paid to DIN EN 62471: 2008 („Photobiological safety of lamps and lamp systems", IEC 62471:2006, modified) as well as BGI 5006 (Oct. 2006).
The operator should inspect the safety-conscious work processes of the staff at regular intervals.

According to the regulations on safety at the workplace, the operator is instructed to make an appropriate and adequate assessment of the risks involved in the use of the LED Spot 100. This assessment must assure that appropriate monitoring measurements are maintained, in order to minimize or eliminate these risks. The information contained in these Operating Instructions can help you in making the risk evaluation.

Risk group

Risk Group

DANGER!
Improper use can endanger the health of the user or of third parties (severe skin or eye damage)!

The Hönle LED Spot 100 comes under the standard DIN EN 62471: 2008 („Photobiological safety of lamps and lamp systems", IEC 62471:2006, modified). It is classified as belonging to Risk Group 3, which requires special safety measures to be observed in its operation. These are described in detail in the stated DIN EN standard.

The respective classification and identification of the risk group is shown on the LED Spot 100:

Obligation of the Staff

Obligation of the Staff

Persons who are assigned to work with the LED Spot 100 are obliged, before starting work:

- To observe the regulations on work safety and accident prevention
- To read the safety chapter and the warning notices in these Operating Instructions, and to observe them at all times during operation
- In particular, to observe the safety measures in DIN EN 62471: 2008 („Photobiological safety of lamps and lamp systems" IEC 62471:2006,modified).

Hazards from Handling the Unit

Hazards from Handling the Unit

The LED Spot 100 has been built to the latest state of technology and to the recognized safety regulations.

The following potential hazards are present:

- **Electrical Hazards**
- **Hazards from UV radiation**
- **Thermal hazards**

DANGER!
Improper use can endanger the health of the user or of third parties (severe skin or eye damage)!

The unit must be used only under the following circumstances:

- When wearing personal safety equipment to protect the eyes and skin, in case complete shielding of the UV radiation cannot be ensured. Safety goggles should conform the standard EN 170 (max. spectral transmission (365 nm) 0.3 %), and should afford protection from radiation, both directly and from the side.
- The LED Spot 100 must be set up and operated in such a way that persons are not subjected to direct or indirect radiation. UV-absorbent plastics or metal sheets can be used as shields.
- Warning notices must be affixed at the workplace and at all entrances to the work area.
- Under no circumstances must the LED Spot 100 be operated in explosive areas, or in the surroundings of flammable materials, gases or liquids.
- The LED Spot 100 must be operated only by persons who have been instructed in all the safety precautions.
- The LED Spot 100 must be used only when it is in perfect condition from the point of view of safety. Operation is not permitted when there is visible damage to the housing, the supply cables or the controller (incl. mains adapter).
- All relevant regulations on accident prevention and on the handling of units belonging to Risk Group 3 must be observed.

Intended use

Intended Use

The LED Spot 100 is a high-intensity UV radiation device for radiating larger areas at a low distance.
Any other or additional usage is regarded as improper use, and is thus dangerous.

The LED Spot 100 must not be used for medical or therapeutic purposes, for skin-tanning, or in other medical equipment.
The unit must be used indoors only. Outdoor use is not permitted.

The operator must operate the unit only in accordance with the usage notes in these Operating Instructions.

DANGER!
Never look directly or indirectly into the light emitting aperture! There is acute danger of becoming blind if you look directly into the radiation outlet aperture!
If improperly handled, UV radiation can damage skin and eyes! It can lead to severe sunburn or to inflammation of the retina and conjunctiva, and possibly to skin cancer.

Organizational measures

Organizational Measures

The functions of all the existing safety equipment must be inspected regularly before start of work or of each new shift. Look for outwardly visible damage.

Informal safety measures

Informal Safety Measures

The general and local regulations on accident prevention and environmental protection must be provided and observed as a supplement to the Operating Instructions.

Electrical Hazards

Electrical Hazards

DANGER – HAZARDOUS ELECTRICAL VOLTAGE!
There is danger of direct or indirect contact with electricity!

The electrical equipment of the LED Spot 100 must be inspected regularly.

Inspection before starting work:

- Check all components of the unit for outwardly visible damage
- Check that all electric cables are in perfect condition

Loose connections must be repaired immediately, and damaged cables must be replaced.

Hazards from UV Radiation

The LED Spot 100 emits radiation in the range of 340 - 440 nm, depending on the type. The optical output power is detailed in chapter 7 Technical Data, p. 21.

DANGER!
Never look directly or indirectly into the Never look directly or indirectly into the light emitting aperture!
There is acute danger of becoming blind if you look directly into the light emitting aperture!
If improperly handled, UV radiation can damage skin and eyes! It can lead to severe sunburn or to inflammation of the retina and conjunctiva, and possibly to skin cancer.

Independently of this, the following instructions must be followed when working with the unit.

- Personal safety equipment must be worn to protect the eyes and skin, unless the UV radiation is completely screened by structural measures.
- Never look directly or indirectly into the light emitting aperture.
- The LED Spot 100 must be set up in such a way that persons are not subjected to the radiation, either directly or indirectly.
- In the case of manual workplaces or in mobile applications, the working area must be enclosed in an appropriate manner.

ATTENTION!
UV radiation can damage the material of electronic components.
When used in the vicinity of the LED Spot 100, these components must be protected from UV radiation.

UV-sensitive objects and surfaces must also be protected from radiation, as UV radiation accelerates the ageing of materials.

NOTE!
Protective articles are listed in chapter 6 Ordering Data for Units, Replacement Parts/Accessories, p. 20.

Thermal Hazards

Thermal Hazards

When operating the LED Spot 100, take the following thermal hazards into account:

- The LED units can reach a temperature of up to 60 °C during operation. There is a risk of burns. It should therefore be ensured that the units cannot be touched at the hot surfaces.
- The radiation of the LED can lead to heating-up of the radiated surfaces, especially dark surfaces. There is a risk of burns.
- Under no circumstances must the unit be operated in the vicinity of flammable or explosive materials, gases or liquids. There is an acute risk of fire or explosion.

WARNING!
The LED Spot 100 emits highly-intensive radiation. There is a risk of fire and burns!

Warranty and Liability

Warranty and liability

The Dr. Hönle AG "General Conditions of Sale and Delivery" always apply. They are available to the user on signing the contract, at the latest. Claims under warranty, and liability for injury to persons and damage to property, are excluded if they can be attributed to one or any of the following:

- Improper use of the LED Spot 100
- Incorrect assembly, commissioning or operation of the LED Spot 100
- Failure to observe notes in the Operating Instructions
- Unauthorized structural modification of the LED Spot 100
- Influence of foreign bodies or mechanical damage
- Unforeseen calamities
- Acts of God

Maintenance and Fault Removal

Maintenance and fault removal

The chapter “Service, Maintenance and Cleaning" describes all the necessary maintenance jobs. Carrying these out ensures reliable operation.

No repairs or alterations must be made to the unit except those described in these Operating Instructions.

Should a fault occur in the unit that cannot be rectified with the help of the Operating Instructions, Dr. Hönle AG Customer Service must be contacted.

Parts that are not in perfect condition must be exchanged immediately.

Only Dr. Hönle AG original replacement and wear parts must be used.

There is no guarantee that other manufacturers’ parts are designed and manufactured to meet the demands of robustness and safety.

No alterations, additions or modifications must be made to the LED Spot 100 without the permission of Dr. Hönle AG.

Contact address for claims under warranty, repair and replacement-part service:

Dr. Hönle AG
UV-Technology
Lochhamer Schlag 1
D-82166 Gräfelfing / Munich
Tel.: +49 (0)89 / 856 08-0
Fax: +49 (0)89 / 856 08-148
E-mail: uv@hoenle.com
Website: www.hoenle.de

3 Transport, Storage, Delivery

Scope of delivery of LED Spot 100

Scope of delivery

- LED Spot 100
- Operating instructions on CD

The delivered parts must be inspected for completeness and damage or other issues.

Any damage that has been ascertained must be documented at once, and reported to the dealer or to Dr. Hönle AG without delay.

NOTE!
Please dispose of the packaging material in an environmentally responsible manner. It may be possible to reuse it.
It is recommended to keep the packaging material, in case the unit has to be sent by post or otherwise transported.

4 Installation, Commissioning and Operation

General Information

General information

- Do not place the unit directly against a wall or another object; leave a space of at least 10 cm in each direction.
- When installing the LED Spot 100 ensure sufficient cooling. In normal operation, the LED Spot 100 can reach a temperature of 60 °C, and must be mounted only on heat resistant, non-flammable materials.
- The air outlet openings must always be kept free.
- Surrounding temperature: max. 35 °C
- The LED Spot 100 must be mounted on a strong, non-flammable bracket. Do not cover the air outlet openings.
- Always plug or unplug the LED Spot 100 only when the LED powerdrive is switched off! If the LED Spot 100 is disconnected during operation, the LED unit or the controller (LED powerdrive) may be damaged.
- Do not touch the connection pins in the plug connector of the LED Spot 100 (risk of ESD damage).
- Protect the LED Spot 100 from any chemical vapors and solvents.
- Operate the LED Spot 100 only in dry rooms. Relative humidity: max. 70 %, non-condensing. Operation in the open air is not permitted.
- Check once more that all plug connections are firm before switching on.

DANGER!
It is forbidden to operate them in the immediate vicinity of flammable objects, liquids or gases.

For more information on the dimensions of the LED Spot 100 please refer to chapter 7 Technical Data, p. 21.

Electrical Connections

Electrical connections

The electric current supply and control of the LED Spot 100 is realized via the LED powerdrive. For further information on the electrical connections, please refer to the operating instructions of the LED powerdrive, chapter „Electrical Connections“.

ATTENTION!
The LED Spot 100 may only be used in combination with the LED powerdrive controller.
For further information on the controller, please refer to the operating instructions of the LED powerdrive.

Connecting the LED Spot 100

Connecting the LED Spot 100

ATTENTION!
The LED Spot 100 must be plugged and unplugged only when the LED powerdrive is switched off via the main switch (10) on the back of the LED powerdrive. If it is unplugged during operation, either the LED Spot 100 or the controller (LED powerdrive) may be damaged.

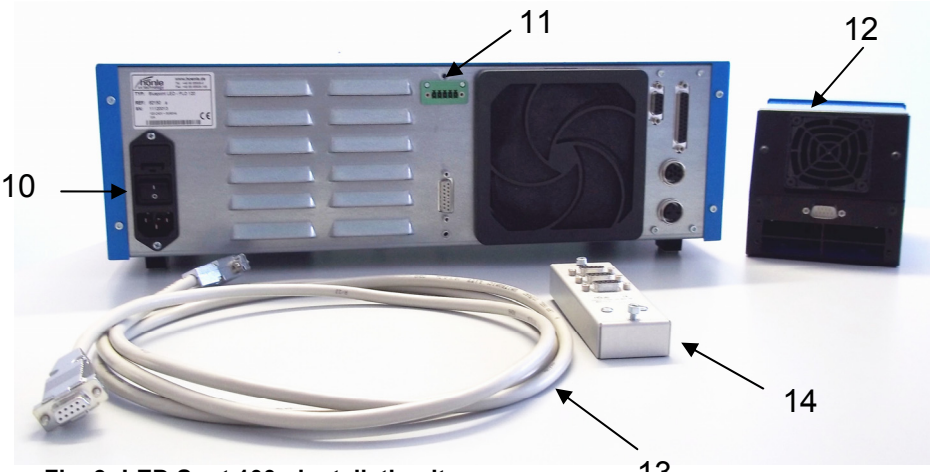


Fig. 3: LED Spot 100 - installation items

10	Main switch of LED powerdrive
11	OPTION socket
12	LED Spot 100 (= LED unit)
13	Adapter cable
14	Adapter (for up to three LED units)

The LED Spot 100 is connected via the delivered adapter (14) to the LED powerdrive (see also the section Replacement parts / Accessories, p. 20).

PROCEDURE

Prior to connecting the LED Spot 100, make sure that the LED powerdrive is switched off (→ main switch (10) in position 0).

1. Plug the adapter (14) into the OPTION socket (11).
2. Tighten the adapter securing screws (15).

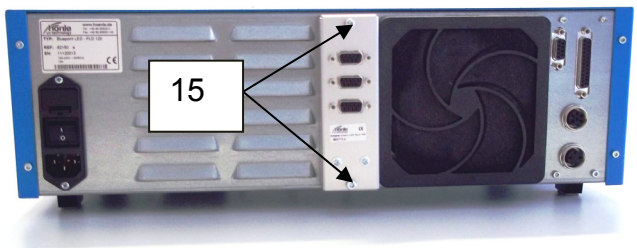


Fig. 4: LED powerdrive with adapter

3. Connect the LED Spot 100 and the LED powerdrive via the adapter cable.
4. Tighten the securing screws at each adapter cable end.
5. Switch the LED powerdrive on again, using the main switch (10). The unit is now ready for use.

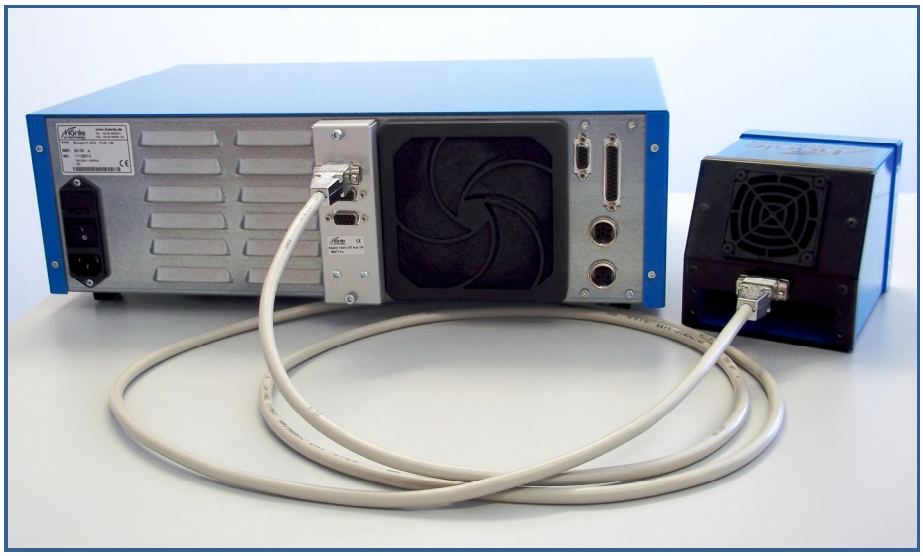


Fig. 5: Connection between LED Spot 100 and LED powerdrive

5 Service, Maintenance and Cleaning

Overview

Overview

Service, maintenance and cleaning work must be carried out by authorized staff only.

ATTENTION!
When carrying out service, maintenance or cleaning, ensure that the light emitting aperture of the LED Spot 100 is not soiled by fingerprints or the like.

Soiling through fingerprints and the like reduces the UV yield of the LED Spot 100.

- Always work with a clean cloth or clean gloves.
- Touch only the metal housings of the LED units.
- When necessary, clean the light emitting aperture of the LED units when they are cold, using a clean cloth and alcohol.

Maintenance

Maintenance

The following maintenance work must be carried out on the LED Spot 100:

Daily:
- Check the LED Spot 100 for damage and soiling of the light emitting aperture.
- Clean the light emitting aperture when necessary; see “Cleaning”.

At regular intervals (depending on the operating conditions):
- Check the filter mat for soiling and clean it, if necessary.
- Depending on the operating conditions, the filter mat should be exchanged after approx. 500 hours of operation.

Cleaning the LED Spot 100

Cleaning the LED Spot 100

ATTENTION!
No not use caustic or abrasive cleaning agents.

When operated in dusty surroundings, or as a result of adhesive vapors, the light emitting aperture of the LED Spot 100 may become soiled. This impairs the intensity of the UV radiation.

- Clean the light emitting aperture with a clean, lint-free cloth and alcohol or acetone.

Replacing the Filter Mat

Depending on the operating conditions, the filter mat should be exchanged after approx. 500 hours of operation. For further order information for replacement filter mats, please refer to chapter 6 Ordering Data for Units, Replacement Parts/Accessories, p. 20.

PROCEDURE

1. Switch off the LED powerdrive (main switch (10) in position 0).
2. Disconnect the adapter cable from the LED Spot 100.

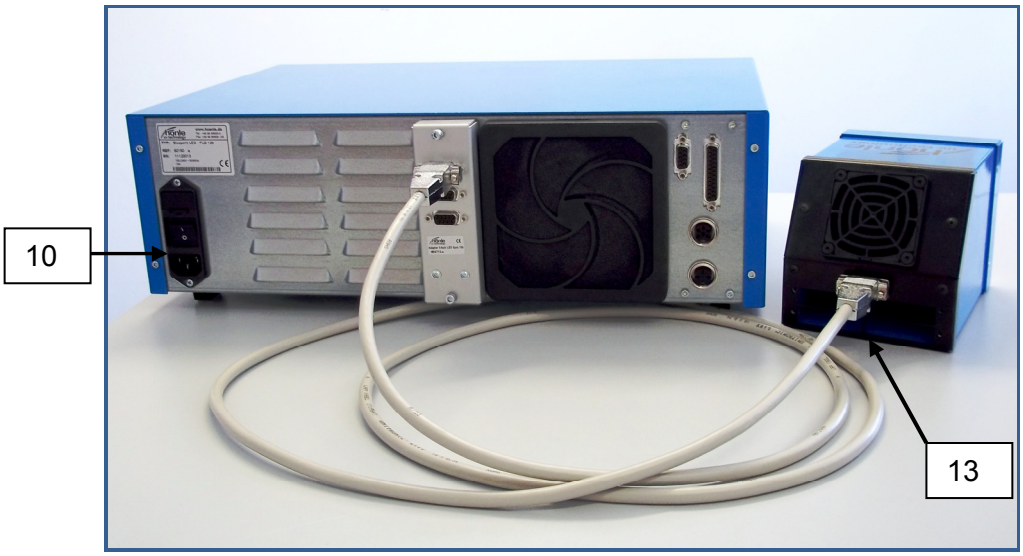


Fig. 6: Disconnecting the adapter cable

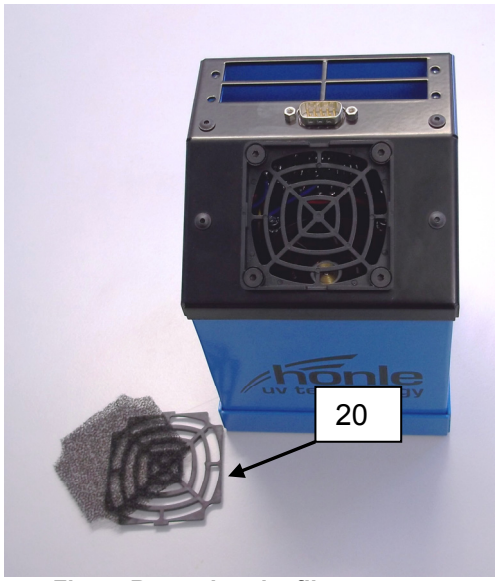


Fig. 7: Removing the filter mat

3. Carefully pull the fan grill (20) upwards (it is not screwed onto the base).
4. Remove the filter mat.
5. Place the new filter mat onto the housing.
6. Put the fan grill onto the filter mat.
7. Reconnect the LED Spot 100 to the adapter cable.

6 Ordering Data for Units, Replacement Parts/Accessories

Order replacement parts from our replacement-parts service at the following address:

Dr. Hönle AG
UV-Technology
Lochhamer Schlag 1
D-82166 Gräfelfing / Munich

Tel.: +49 (0)89 / 856 08-0
Fax: +49 (0)89 / 856 08-148

LED Unit

LED Unit

Designation	Article/Order Number
LED Spot 100, 365 nm	61504
LED Spot 100, 375 nm	61503
LED Spot 100, 385 nm	61502
LED Spot 100, 395 nm	61501
LED Spot 100, 405 nm	61500

Controller Unit

Controller Unit

Designation	Article/Order Number
LED powerdrive 40	64000
LED powerdrive 80	65900
LED powerdrive 120	65901
LED powerdrive 120 XL	64015

Replacement parts / Accessories

Replacement parts / Accessories

Designation	Article/Order Number
Adapter	64710
UV warning notice	45890
Operating instructions (German/English) on CD	65807
Filter mat	63482
Extension cable 1.5 m	63190
Extension cable 2.5 m	63199
Extension cable 4.0 m	63189

WARNING!
Only original Dr. Hönle AG replacement parts may be used.
If other parts are used, the operating safety of the LED Spot 100 cannot be guaranteed.

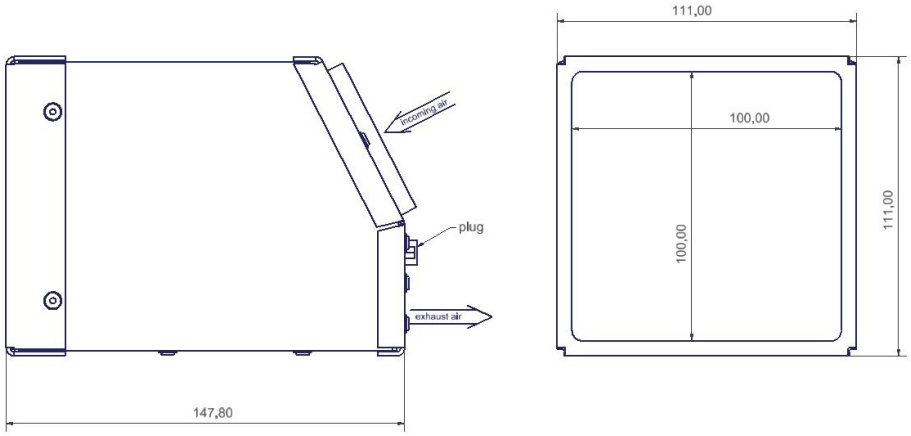
7 Technical Data

Typical LED service life	> 20 000 hours*				
Wavelengths in nm	365	375	385	395	405
Typ. intensity in mW/cm²**	150	200	250	350	400
Power input	max. 200 W				
Dimensions (H x B x T)	approx. 150 x 111 x 111 mm				
Weight	approx. 1.7 kg				

* Depending on operating conditions and ambient temperature
** Measured with Hoenle LED sensors for UV meter

LED Spot 100 – Dimensional drawing

Dimensional drawing



Optical Data

Optical Data

Typical intensity distribution as a percentage (2 mm spacing)

Relative spectral irradiance